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UTCS ComputerNews

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The Editor
COMPUTERNEWS
11 King's College Road, Room 207
University of Toronto
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Let's Talk About It: Instructional Computing

GENTLE READER, a discussion of instructional computing may be in order now that we have just substantially upgraded the facilities we run or manage. Additional facilities have been added not only centrally, but also at Scarborough and Erindale. In addition, the Engineering Computing Facility (ECF) was substantially upgraded as well.

My mental model for the use of computers for instruction really divides into three categories (there may be other ways but these I find of use in my own analysis). The first is really understanding the computer or computing itself, i.e. the computer as subject matter. The second is using the computer to solve problems, i.e. the computer as a tool. The third is computer aided instruction (CAI) or the computer as a teacher. The characteristics of the three uses are substantially different and I will dig into each one, analysing our services and others on campus within each category.

The first category, computer systems as subject matter, is primarily the province of Computer Science and certain Electrical Engineering courses. The appropriate characteristics for services such as this, it seems to me, are that they do not necessarily need to be totally user friendly, since there is at least some utility in understanding some of the detail of accessing the systems and meandering around inside. They also require that fairly intimate details of compilers and languages be visible and one of the useable services which UTCS offers in this category is the BICS (Basic Instructional Computing Service) system using the Department of Computer Science (DCS) Turing language, running on the IBM 3033U16 Partnership machine. Turing is available via two UTS (Universal Timesharing System) machines running as virtual machines under IBM's VM (Virtual Machine) operating system. VM allows us to offer a number of what we call virtual machines on the same physical machine, effectively a number of different computers with different characteristics running on one actual computer. There are 180 terminals connected to the U16, but only a maximum of 150 of them at any time can be using the two UTS Turing machines.

The other computers we run which offer the same type of facilities are a DEC VAX running UNIX at each of Scarborough and Erindale, and two UNIX VAXs at the Computing Disciplines Facility (CDF) at the Engineering Annex. Other facilities include two UNIX VAXs run by the Faculty of Engineering in the ECF.

The ECF (and perhaps the CDF as well) are used for the second category of instruction as well.

The second category, use of the computer as a tool to solve problems, has a substantially different set of requirements from the first. Getting on to the system should be very straightforward and easy, and the software packages used to actually solve the problem (of whatever sort) should be as user friendly as possible. The chief characteristic really is that the user should have to learn no more about computer systems per se than is absolutely necessary.

We offer a number of services to address the needs of the second category, and practically none of them meet the requirements fully. The BICS service has a third UTS machine which is effectively a "glass keypunch", preparing input to be sent across and processed on the academic machine (3033/N12). The academic machine offers high speed processing for students and access to the general facilities and packages on that machine. The application packages vary widely in user friendliness and level of support.

For instruction, the N12 can be accessed not only from BICS, but also directly using WYLBUR. The route we prefer to see people use for instruction is BICS (it is cheaper

continued...

Let's Talk About It continued

too!), any access to our systems from public terminals to anything but BICS, uses terminals intended primarily to be used by researchers.

Other systems used for the second category are the 11/70 (mostly for statistics courses), the DEC 10, the LIBRA (VMS) VAXs at Scarborough and Erindale as well as the CDF and ECF.

The third category is one I do not know very much about, except that there seems to be very little computer aided instruction on this campus. Ideal characteristics include basic systems with enough power and intelligence to accomplish the teaching task and an easy to use ''authoring'' language (another noun which should not have been verbed!). Three CAI applications that I know of are in Physics, Management Studies, and New Testament Greek, all based on APL. There may be others I am unaware of.

A substantial fraction of the instructional facilities we now provide could probably be as easily offered using individual or networked microcomputers. DCS is investigating Turing on IBM PCs and there is certainly a substantial set of the second category needs that micros could meet as well.

I suspect the use of ''close in'' computer power where possible is probably the way we will ultimately meet a large portion of computer instructional needs. Getting there will require very careful planning (and not an inconsiderable amount of money). One of the University of Toronto's problems is simply a matter of scale. All of the institutions heading toward ''a computer for every student'' are relatively small, and all are private and relatively rich. It seems money solves most problems most easily, and it seems a shame that it is what the University of Toronto has the least of.

Warren Jackson

New Subscription Policy

We are pleased to announce the continuation of our free subscription policy. There are some important changes, however, which will affect **all** readers (including CAN holders).

1. Beginning immediately, all subscriptions will be annual, running from January to January.
2. All subscribers, including CAN holders, must renew their subscriptions each year. This may be done by filling out the Annual Computernews Subscription Renewal Form appearing in the October/November and December issues of *COMPUTERNEWS.* Any subscription not renewed by the beginning of January will be dropped.
3. New account holders who come to UTCS during the subscription year will become subscribers automatically but will still have to renew in time for the following subscription year. Similarly, a reader whose subscription has been dropped may renew at any time but must also renew before the following January if the subscription is to continue.

With these changes, we hope to reduce our subscription list to a manageable size by including only those who actually need *COMPUTERNEWS.* We regret any inconvenience this new policy may cause our readers.

Martha Parrott

HSM - Hierarchical Storage Manager

The IBM product HSM, Hierarchical Storage Manager, was installed on October 18 for the management of the Academic system's online storage volumes. This article gives a brief summary of HSM. A six page document is available online which gives further details on what HSM does and some of the benefits the product brings to users and UTCS alike. To get a copy

WYLBUR users should enter	DO HSMDOC
TSO users should enter	HSMDOC
Batch users should execute	// EXEC HSMDOC

Briefly, HSM performs the following functions:

1. HSM *automatically* migrates infrequently referenced datasets from primary online volumes (USER01, USER02, etc.) to *migration volumes* (MIGRAT). The migration process involves shrinking the dataset (using special encoding techniques), in some cases by 50% or more! When HSM was installed, only datasets that had not been referenced for three years or more where migrated. This figure was reduced to two years on October 20. When HSM has been fully phased in, it is planned to migrate datasets which have been unreferenced for nine days.
2. When a user's program or interactive session (TSO or WYLBUR) references a migrated dataset, HSM locates the dataset on the migrated volume, decodes it, and returns it to a primary volume *automatically*. Unless the dataset is very long, this process takes only a few seconds.
3. HSM has commands that allow the user to force a dataset to be migrated or recalled on demand.
4. Once HSM is fully phased in, datasets which have not been accessed in six months will be completely deleted from the migration volumes. However, since HSM volumes are backed up (i.e., copied to tape) on a regular basis, a copy of the deleted dataset will still be available from the backup tapes. This backup copy will be kept for two years.

The immediate effect of HSM will be a dramatic increase in the amount of available space on the primary volumes; this is due to the encoding and compression techniques. In the future, users will be able to use HSM to retrieve datasets (which were accidentally scratched) without having to call Central Advising.

HSM will also help UTCS with a disk conversion program. UTCS is in the process of installing larger and faster disk drives (IBM Model 3380's). These drives have a track size larger than the current 3330 drives, and HSM has the capability of making the necessary conversion in a relatively straightforward fashion.

Further information on HSM can be found in the online documentation or by calling Central Advising at 978-HELP.

Ihor Prociuk
Bill Lauriston

3330 Offline Pack Conversion

UTCS is no longer able to support offline mountable disk packs on the IBM 3033/N12. People who may have been considering offline packs of this type should explore alternate methods such as tapes or online disk. Those already renting mountable packs have been contacted, their data storage needs examined and their datasets moved appropriately. These users will need to modify the JCL referring to their moved datasets. (Any JCL using UNIT=3330 will be affected.)

Any questions about the use of mountable disk packs at UTCS, or methods used in moving datasets from mountable disk packs to alternate storage media should be directed to Terry Jones through Central Advising at 978-HELP or by mail to McLennan Physical Laboratories, Room 257.

Terry Jones

3380 DISK Documentation

As most *COMPUTERNEWS* readers already know, UTCS is replacing all of its direct access storage with the IBM 3380 storage units. Although the individual track capacity of these drives is much greater than the track capacity of the drives being replaced, the rules for dataset allocation remain more or less the same.

UTCS has prepared a document stating all the necessary rules; we hope this will aid users. GPJS users may obtain the document by simply running the job:

```
// EXEC DISK3380
```

TSO users need only enter the command:

```
DISK3380
```

WYLBUR users need only enter:

```
DO DISK3380
```

Herb Kugel

Disk Storage Charges and 3380 Drives

As most or all of you are aware by now, UTCS is replacing its 3330 style disk drives with new technology 3380 drives. The replacement has given rise to the question of whether there will be an alteration to the charging rate for online storage. The issue is not a simple one. The purpose of this article is to inform our customers of the factors which are involved in establishing a charging rate for the use of this resource. There are three factors which must be currently acknowledged:

- Existing Budgetary Requirements
- The University's intent to charge for UTCS service in real money
- The new costs and technology considerations created by the move to 3380's.

Budgetary Requirements

The Annual Plan submitted for fiscal year

continued...

Disk Storage Charges continued

1983/84 recognized that UTCS would have to address the issue of providing online disks, since contracts for the existing drives expired in December 1983. Details of any specific replacement or continuance of machinery were not known at that time. Hence, our target recoveries set in the 1983/84 budget did not anticipate any alternations in charging levels for online storage during the budget year. For this reason any significant variation in charging for online storage for fiscal year 1983/84 is inappropriate.

Real Money Charging

It is the stated intent of the University that funds to be used for computing be distributed to the end user departments. These funds will not be tied to computing at UTCS.

The move toward the implementation of this policy has caused UTCS to examine the charging system currently in place, a system produced by a time when computing equipment was a scarce commodity. In particular, changes to charging rates have been made so as to minimize alteration in the charges end users receive. The intention has been that what cost $1 ten years ago should continue to cost $1 today. Obviously such a scheme has not reflected the general reduction in the cost of computing equipment. On the other hand, it has not reflected the increased costs of communications software, and human support.

Given the movement toward the implementation of real money charging and the necessity to make charges reflect costs, UTCS is reluctant to alter pieces of its charging philosophy without those alterations being a part of a larger plan. Any revision of charging rates for 3380's will be made to conform to the plan to move to real money charging. More details of how the implementation will be realized will be established as a part of the plan for next fiscal year.

Cost and Technological Considerations

The 3380 disk drives were selected for several reasons. There were two primary factors, however. First, it was determined that there were financial advantages to selecting the IBM 3380's over competitors' offerings. Second, the 3380 had a good record of reliability. Competing products had not yet established a field record. Disk drive reliability has been a problem for UTCS during the past several years, and this weighed heavily in the choice. An additional benefit, though not critical, was that with a single vendor providing disks, CPU and memory, "finger-pointing" disputes are avoided should a problem occur.

Determining a cost per byte comparison between 3330's and 3380's is not straightforward. The 3380's are a new generation of disk drives. They are permanently mounted disks. Until now, UTCS has had disks available that could be stored off the drive and be mounted on request. Hence, the operating environment has changed in that adequate working space must be kept available online. Previously, mountable packs could be mounted to accommodate short term storage requirements. A track of 3380 storage contains 47,476 bytes compared to 13,030 bytes for 3330's. Changes in the way in which data moves from disk to memory/CPU were also necessitated. The cost comparison is further complicated by the decision to finance 3380's differently than the 3330's were.

It is fair to say that, given the financial arrangement, a byte of 3380 storage costs less than a byte of 3330 storage. However, given the change in the system/operational environment, it is not clear at present what is the difference in cost to deliver a byte of storage on each device. This issue will be examined prior to the next fiscal year as we gain experience with the new drives.

Charging for Online Storage for the Remainder of Fiscal Year 1983/84

Because of the factors explained above, UTCS will attempt to follow the historical

continued...

Disk Storage Charges continued

precedent of establishing charging rates for 3380 storage so as to minimally affect the cost of storage for the remainder of the 1983/84 fiscal year. The rates will be $0.0492 per track per day. The minimum amount of space which can be allocated to an individual is still one track. This limitation is vendor imposed and can not be changed. Users who may have numerous small datasets are advised to make use of partitioned datasets to avoid charges for unused space.

As UTCS learns more about operating with 3380's, and as the evolution toward real money charging becomes clearly defined, UTCS will inform its customers of these developments in *COMPUTERNEWS* and in User Committees.

Don Gibson

Documentation Update

Work on the new *UTCS Catalogue of Products and Services* proceeds. The first printed section scheduled to appear will deal with access to UTCS services. In addition to information on such procedures as cross-machine transfers, it will contain abstracts describing APL, the DECsystem-10, TSO, WYLBUR, UNIX 11/70, GPJS and PACX. Some of these abstracts will point to online UTCS Guides which provide detailed information.

Although the *UTCS CATALOGUE: ACCESS* is not yet published, some of the UTCS Guides are now available online. A WYLBUR user may obtain a hardcopy of a Guide through an EXEC file (**do document**). A TSO user should type **document** or **help document** in response to READY. Both users will be prompted for MANUAL. The correct response is the unique name code assigned to each Guide (please see below). Batch users should follow the instructions in *Printing New UTCS Guides Stored Online,* available at the Information Office (Room 206, Engineering Annex) and at the Central Advising Office (Room 237, McLennan Physical Laboratories).

During the changeover from USERBOOK to *UTCS CATALOGUE, COMPUTERNEWS* will print a list of new documentation as it becomes available.

New UTCS Guides online:

UTCS Guide to APL (MANUAL=APL)
UTCS Guide to GPJS (MANUAL=GPJS)
UTCS Guide to WYLBUR (MANUAL=WYL)
UTCS Guide to INTRO 9700 Printing
    MANUAL=X9700SAM (with font samples, printed on the 9700)
    MANUAL=X9700 (without fonts, output from line printer)
    This Guide is also available in hardcopy from the Information Office.

Martha Parrott

File Transfers Using KERMIT

UTCS has recently started to work on a new file transfer service which will allow for the error-free transfer of files between a user's microcomputer and a mainframe. This service will be based on a file transfer protocol called KERMIT.

This file transfer service will be especially useful for users who have data which they need to transfer to another computer in an error-free fashion. For example, a user might collect data on a micro and want to transfer it to the IBM 3033/N12 in order to analyze the data using SAS.

KERMIT was originally developed at Columbia University for transfers between their DEC-20 mainframe and CP/M microcomputers, but the protocol is now available on a large variety of computer systems. KERMIT is an acronym for KL-10 Error-free Reciprocal Microcomputer Interchange over TTY-Lines.

UTCS will be providing software and support for transfers between the IBM 3033/N12 and the following micro/minicomputers (for the operating system in brackets):

1. IBM PC (MS DOS)
2. APPLE II (DOS)
3. DEC LSI-11 (RT-11)
4. Osborne 1 (CP/M)

KERMIT transfers files by having two KERMIT programs communicate with each other — one on the mainframe and one on the user's computer. These programs make transfers by exchanging packets of data with error-checks in the following fashion:

1. The transmitting KERMIT divides the file into small units called packets.
2. It calculates a checksum or error-check character.
3. It then transmits one packet at a time, waiting for a reply from the receiving program.
4. The receiving KERMIT calculates the checksum. If it matches the transmitted checksum, KERMIT assumes that the packet was received correctly and sends a positive acknowledgement to the transmitting KERMIT.
5. If the checksum is wrong, the receiving KERMIT sends a negative acknowledgement to the transmitting KERMIT requesting that it resend the packet.

The above steps are done until the whole file is transferred or until the maximum number of resends is exceeded.

We will be implementing the mainframe end of KERMIT not on the IBM 3033 directly, but on the "HUB" VAX in the McLennan Physical Laboratories. The VAX will act as a file server for the IBM.

There will be a one-time charge of $200.00 for access to the KERMIT server. This charge will include a validated and tested KERMIT package for one of the systems listed above. In addition, there will be charges for use of the KERMIT server based on connect time.

We expect this new file transfer service to be in place during the first quarter of 1984.

For more information, please contact Philip Murton at 978-5271.

Philip Murton

Christmas & New Years Hours of Service

UNIVERSITY OF TORONTO COMPUTING SERVICES CHRISTMAS & NEW YEARS HOURS OF SERVICE	23 Fri.	24 Sat.	25 Sun.	26 Mon.	27 Tue.	28 Wed.	29 Thu.	30 Fri.	31 Sat.	1 Sun.	2 Mon.
LIBRA Service	X	X	X	X	X	X	X	X	X	X	N
BICS Service	X	X	X	X	X	X	X	X	X	X	N
IBM 3033/N12 Services	N/UO*	UO	UO	UO	UO	UO	UO	UO	UO	UO	N
DEC1090 Services	N/UO*	UO	UO	UO	UO	UO	UO	UO	UO	UO	N
DEC 11/70 Services	N/UO*	UO	UO	UO	UO	UO	UO	UO	UO	UO	N

* On Friday, December 23, standard services will be in effect until 17:00. Unattended operation of these machines will commence at 17:00 on December 23 and terminate at 24:00 on January 1.

Legend

X	- service unavailable
N	- normal hours of service
UO	- unattended operation:

- for the IBM 3033/N12 computer, all services except GPJS Classes B, C, and E, Calcomp and Gould plotting and TSO are available

- for the DEC1090 computer, all services except tape mounts are available

- for the DEC 11/70 computer, all services except tape mounts, Varian plotter, and the CAT phototypesetter are available

During the period of unattended operation the Arts and Science Terminal, Education and Research Interactive Terminal Room, and the Physics Terminal will be closed. It is planned to have the Engineering Annex Terminal open on a limited basis during the period December 26 through December 30. Please check at this site for precise arrangements.

Users should note that this is a tentative schedule and may be altered via HOTNEWS and alert notices closer to the Christmas period.

SAS/FSP® and SAS® 82.3

All of SAS 82.3, including SAS/FSP, went into production on October 24. SAS/FSP runs under TSO only, with PACX Class 132 for most people; however, very little TSO knowledge is necessary to start using SAS/FSP.

The two basic commands needed are the ALLOC statement, to make your SAS data library available to your SAS session, and the command "sas" to get into SAS. For example, suppose you have a SAS data library called U01234.STUDYA.SASLIB, which contains a SAS data set called SEPT83. The following sample session illustrates how to begin PROC FSEDIT to make changes, deletions and additions to your data set. The lines in upper-case and line numbers are printed by TSO; your responses appear in lower-case.

```
READY
alloc fi(x) da('u01234.studya.saslib')
READY
sas

NOTE: SAS RELEASE 82.3 AT THE UNIVERSITY
      OF TORONTO COMPUTING SERVICES

 1? proc fsedit data=x.sept83; run;
```

The Primary Option Menu will now be displayed, and you may proceed with the function of your choice.

Online help is available for SAS/FSP, and the 1982 User's Guide may be purchased from the UTCS Information Office. If you have any questions about SAS/FSP, or any problems with SAS 82.3, please call the Central Advising Office at 978-HELP.

Diane Mitchell

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LISREL and SPSS-X 2.0A

As mentioned in the last issue of *COMPUTERNEWS,* UTCS is a test site for the new release of SPSS-X. SPSS-X 2.0A with LISREL VI is now available to users. Documentation on how to use LISREL as a USERPROC can be obtained through the new INFO command:

```
// EXEC SPSSX
//SYSIN DD *
INFO LISREL
/*
//
```

In addition to LISREL and USERPROCs, SPSSX 20.A contains a new PROBIT procedure and end-of-file processing via the new END subcommand on DATA LIST. Documentation on these features is also available through the INFO command.

You can invoke the LISREL by specifying LISREL on the NAME= subcommand of the USERPROC command procedure. This command is followed by the statements of your LISREL program. End the procedure with an END USER command. A REGION of 640K and a PARM of 240K are also necessary. The following is a sample job:

```
// JOB
// EXEC SPSSX,REGION=640K,PARM=240K
//SYSIN DD *
  :
  :
USERPROC NAME=LISREL
  (LISREL program)
END USER
/*
//
```

continued...

LISREL and SPSS-X 2.0A continued

User's manuals for LISREL have been ordered and should be available from the UTCS Information Office shortly. If you need help with LISREL, please call the Central Advising Office at 978-HELP.

Diane Mitchell

Humanities News

Thanks to Professor Ian Lancashire of the Department of English at Erindale College, literary students now have a special guide to using UTCS systems and programs in their research. In his new book *COMPUTER APPLICATIONS IN LITERARY STUDIES: A Userbook for Students at Toronto,* Professor Lancashire has put together a ''tool-kit for literary computing at one site'' -- UTCS. Professor Lancashire acknowledges that his book is biased towards English applications and the DECsystem-10; however, he encourages his ''colleagues to put that deficiency right in the next version.'' Meanwhile, it contains a wealth of information and good advice which can be employed in other disciplines.

Although much of the information about the various computer systems is available from vendor manuals, UTCS documentation, online help and document files, it is collected here and presented with admirable organization. Professor Lancashire explains in *plain* language the terminology associated with computing in the DECsystem-10 environment, in which English students do most of their work, as well as other computer systems used in literary studies. He includes practical information needed to function on the DECsystem-10, ranging from the UTCS accounting procedures, terminal sites and operations, advising and reference, to necessary and useful programs, such as entering and editing text with SOS, formatting with SCRIBE and outputting the results on various media. The book was actually produced using SCRIBE, and many SCRIBE features are in evidence.

The contents include in part:

- Two chapters on concordances, one a tutorial for COGS (COncordance Generating System) by John Bradley of UTCS, the other a comparison of COGS and OCP (Oxford Concordance Package).
- A chapter by Stephen Reimer (a graduate student in English) on STATS, a statistical package for literary study developed by Mr. Reimer.
- A chapter by Professor Robert Cluett of York University on the York Computing Inventory and its program (YORK SYNTAXER). The program parses ''cuts'' of text in detail and develops some statistics for stylistic analysis. YORK SYNTAXER is now available at UTCS, and the chapter includes a section by Lidio Presutti on the use of the program from the DECsystem-10.
- A chapter by Willard McCarty (another graduate student in English) on CALENDER, a set of programs which perform bibliographic and database operations. CALENDER was written by Mr. McCarty from Professor Lancashire's specifications for the Records of Early English Drama project.

The book is xerographically reproduced from a master printed on the XEROX 9700 laser printer. It has about 350 pages and is available at the University Bookroom for about $14. Anyone embarking on some type of literary research should consider acquiring a copy.

Lidio Presutti

APL News

Notice to APL BROWNBOX Users

The following is reprinted from a recent HOTNEWS item.

"Fix for Failed Brownbox Workspaces

The BROWNBOX System failed as a result of the release installed on Sunday September 18, 1983. Fortunately, a fix has been found.

Affected workspaces: Any workspace based on the BROWNBOX System and containing the function [IS].

Symptom: completely unable to access data which is known to be there.

Fix:

```
)XLOAD WORKSPACE
)COPY 10 BROWN1 IS
)SAVE
```

BROWNBOX is an old, Class C product. It is not robust, and when it fails, the mode of failure is often obscure. Moreover, in future it will become more susceptible to the type of failure just experienced. Each time we install a new release there is the chance that BROWNBOX could break again. Since UTCS does not support BROWNBOX, those users who are still using it are in a vulnerable position and must consider finding an alternative. We were able to supply a fix this time, but it is unlikely that this will be possible in the future."

If you have any questions or comments, please don't hesitate to call Mary Ann Lawry at 978-6878.

Side Effect of the November 82 Release

The November 1982 Release of Sharp APL included joint representation, an implementation strategy which allows several variables to share a common value. There is one side effect of this change which affects the stacking of values within the syntax analyzer.

In previous releases:

```
   X<--2
   (X<--5)+X
10
```

Because the **Name** X was stacked, the expression (X<--5) was executed. The + was executed with the new value of X.

The APL standard now being drafted by ISO requires that the above expression be evaluated by stacking **VALUES** rather than **NAMES,** so that the result of the above would be 7 instead of 10. This minimizes the problems of side effects, and is a superior definition.

One error which did occur as a result of this change may be summarized as follows:

```
R<--(2 + FUN) - LIMIT
```

Where "FUN" is an APL function and "LIMIT" is a variable. The problem was that the value of LIMIT was changed during the execution of FUN. Before the release, the new value of LIMIT was used on the right and side of the "-". After the November 82 Release was installed, the original value of LIMIT was used. This can be a difficult error to detect.

The UTCS Guide to APL

The *UTCS Guide to APL* is available at UTCS as of September 30, 1983. This Guide replaces the APL part of Userbook Section 4: *Interactive Services.* The *UTCS Guide to APL* is the main UTCS document on APL. It is not a language manual, but rather provides detailed information about using Sharp APL at UTCS.

continued...

APL News continued

The workspace 1 UTCSGUIDE contains a utility which may be used to request the printing of UTCS Guides. It is expected that the most frequent use of this utility will be to print the *UTCS Guide to APL.* To use this utility type:

```
)LOAD 1 UTCSGUIDE
HELP
```

Instructions will be printed.

Mary Ann Lawry

Microcomputer News

An on-going project at the Microcomputer Facility is the creation of a database of information on microcomputers in the University. This allows us to inform people of any useful developments with respect to their particular machines. It also allows us to bring together users who may have similar interests and needs, either to solve a short term problem or perhaps to form a Users' Group. From this database, UTCS determines the relative numbers of each type of microcomputer, the better to plan any future support for microcomputer related products. The database currently has more than 200 entries and is continually expanding. There is provision for confidentiality if you wish to be included in the database but do not want your name given out to others. If you have a microcomputer and you are not included, or if you have updated any equipment or software, please give me a call, and we will add your information.

The Microcomputer Facility also is involved in evaluations of different microcomputers and products. Several vendors have loaned or arranged to loan one of their machines so that we can inform the University community of our opinions on their products. As a result of this evaluation, we intend to produce a short report on each machine. The first microcomputer we examined in this way was the Victor 9000. At the time of this writing, we are looking at the Nelma Persona. Reports for each of these machines will be available some time in November.

The Campus IBM-PC Users' Group is meeting regularly each month in the Galbraith Building, Room 202. Meetings are scheduled for Tuesday, October 25 and Wednesday, November 30, both at 4 p.m. For further information on this group contact Grant Davis, at 978-5071 or Al Heyworth (Chairman) at 978-4936.

UTCS, in cooperation with the School of Physical and Health Education, is again offering a non-credit introductory course entitled ''Microcomputers for Absolute Beginners.'' The fall term has already begun, but the course will be offered again in the new year. For information on this course, please contact Dr. Ed Thompson at 978-4810.

The Education group of UTCS has acquired a training course that may be of interest to some microcomputer users. It is entitled ''How to use the VisiCalc Software Package - A Video-based Training Program.'' If you wish to arrange to view this program, please call Irene Rosiecki at 978-4565.

For further information on any of the above items, please call Grant Davis at 978-5071.

Grant Davis

Sort Procedures

Various *language processors and products* can call up the system sorter to do internal sorts. These have *always* invoked PGM=SORT, which accesses the most recent release and maintenance level of the sorter. These processors are:

BMDP
COBOL
PL/I
MARKIV
SAS
SPSS
SPSSX

On November 15, 1983, UTCS will be upgrading **all** its supported sort *procedures* on the IBM 3033/N12 system to invoke PGM=SORT. The following catalogued procedures will be affected:

SORT
SORTD
SORTER
SORTER1
SORTTAPE
SORTTAP1
SORT3
UTDSUTIL

Most users will not have to make any changes to their current programs. However, users who have written their own sort procedures should modify them to access PGM=SORT rather than the old PGM=IERRCO00.

UTCS is reviewing its current sort procedures with a view to consolidating them. This will result in users having to remember only one or two procedures for most of their sorting requirements.

Users who need further information or additional assistance should contact the Central Advising Office at 978-HELP. Similarly, users with sort programs which begin to exhibit "peculiar" behaviour (for example; they suddenly require much more memory or take much longer to execute) after the November 15 change date should contact one of the consultants at Central Advising.

Ihor Prociuk

MSGLEVEL Default

On December 15, the default MSGLEVEL on the IBM 3033/N12 GPJS will change from (2,0) to (1,1). Users explicitly coding MSGLEVEL will be unaffected.

With MSGLEVEL=(2,0) only input job control statements are printed. This is usually insufficient to solve common JCL problems. The new default, MSGLEVEL=(1,1), prints a lot more information. In the past, in fact, Advising has frequently had to request that inexperienced users rerun their jobs with MSGLEVEL=(1,1) to facilitate solving a problem. With the new default, users unfamiliar with the IBM should not have to rerun their jobs when they have a problem. Experienced users who have always wanted control over the MSGLEVEL can continue coding whatever they wish.

The change in defaults is possible for three reasons. First, as more users FETCH their output online instead of printing it, the extra verbose listing will not waste paper. Second, IBM has recently made the MSGLEVEL default an install option of the system. This allows UTCS to change it easily without making modifications to the system. Third, the new JCL manual no longer says that MGSLEVEL=(2,0) is the default. Instead it indicates an "installation default." Thus the change can be made, and the service remains "vanilla".

Alex Nishri

Phaseout of Old Versions of SCRIPT

The University of Waterloo has asked UTCS to remove all old versions of Waterloo SCRIPT from our system. UTCS will comply with this request by removing all versions except the most up-to-date version, version 82.1, on January 3rd, 1984. At that time the only version available will be the version 82.1.

This change should not affect users who are using the WYLBUR "SCRIPT" EXEC file, or the TSO WSCRIPT command, since they automatically get the current version, but users who have coded their own JCL, and code anything but "VER=821" might be affected.

For more information, please call John Bradley at 978-3995.

John Bradley

Release 4.0 of PL/I Available for Testing

Readers of UTCS *COMPUTERNEWS* may be aware that we have had difficulties with Release 4.0 of the PL/I compiler. These problems seem to have been solved, and UTCS would like to make the compiler available for testing. This compiler has become more important recently because it is the only PL/I product that enjoys IBM's full support with the new 3380 direct access storage devices that UTCS will be acquiring.

To make testing easier, modified versions of the standard UTCS PL/I catalogued procedures, PLI, PLILE, PLILEGO, and PLIGO have been created. These are TPLI, TPLILEGO, and TPLIGO respectively, and they are used exactly as the production procedures. For example, to compile and run a job, the user need only code:

```
// EXEC TPLIGO,LEVEL=OPT
```

Existing PL/I load modules will run directly as before, but users who wish to recompile any part of an existing program under Release 4.0 may have to recompile the entire program. This is because Release 3.0 PL/I base library modules may have been incorporated into the load module or modules. Users wishing to modify part of an existing PL/I load module should contact the Central Advising Office before proceeding.

We urge users to test their PL/I applications as soon as possible. Any questions should be directed to the Central Advising Office at 978-HELP.

Herb Kugel

FORTRAN G Compiler To Be Removed

Some years ago, IBM provided the University of Toronto with software at no charge. Such a free package was the FORTRAN G compiler, which was later reissued as the G1 compiler. Now the G1 compiler has CLASS C support status, and the G compiler is an unrepaired G1 compiler. Since our statistics indicate it is no longer being used, the G compiler will be retired from service at UTCS on November 1, 1983.

If you have any questions or concerns, please contact the Central Advising Office at 978-HELP.

Herb Kugel

The Sale of the CRF Lab

As discussed in last month's *COMPUTERNEWS,* the CRF lab will cease to operate on November 1. If you have used the CRF (also known as CSS) lab in the past and wish to retreive your data, please act now.

Its two main computers the 11/05 with GT40 graphics and the 11/40 with GT44 graphics — are being offered for sale. The 11/05 is for sale as a system or as components. It has an 11/05 processor, a GT40 graphics unit, a TU10 800bpi magnetic tape with one drive, two RK05-compatible drives, and of course a paper tape reader/punch. This system runs RT-11 but could be set up to run the UCSD p-system, Forth, or other operating system. It is not suitable for running RSX-11M (it could run RSX-11S), nor for UNIX.

We would like to find another party to carry on operation of the 11/40 system as a service for some fixed period of time. Ownership would be transferred to any U of T Department or Institute willing to operate the machine in its present state and pay the maintenance fees. There is considerable room for negotiation here. If no taker is found for this service, then this system too will be offered for sale in whole or in parts. The following is a list of the equipment which comprises the GT44 system:

1. PDP11/40 CPU with memory management and float hardware
2. 48KB DEC core memory + 12kb Monolithic Systems memory
3. LA 34 hardcopy terminal (30 cps)
4. VR17 17" vector graphic display terminal
5. 2 x RK05 cartridge disk drives, 2.5 Mb each
6. RL11 controller for RK05s above
7. Wangco tape drives, 800/1600 bpi, 75 ips, with datum controller
8. AED 6200 Floppy disk system (2 x 8" drives) with controller
9. 600 lpm printer (Data Printer Corp.) and controller
10. Documation card reader with controller
11. Summagraphics 20" x 20" digitizing tablet
12. 2 x DL11-E asynchronous interface with modem control
13. PC11 paper tape reader/punch
14. Time-of-day clock (CRF)
15. DR11-C parallel interface
16. Colorado Video compressor and expander for video digitizing
17. LPS11 8 channel A/D, 2 chan D/A and digital I/O
18. Unibus expansion box
19. Printronix 300 lpm dot matrix printer
20. Analog chart recorder
21. 2 x RL01 5 mbyte cartridge disk drive
22. RL02 10 mbyte cartridge disk drive
23. RL11 controller for above drives (up to 4 RL0x drives)
24. 4 19" rack mount equipment cabinets with power supplies and fans. approx. 6' height.
25. 1 cabinet, as above, 4'
26. Zeta pen plotter

If you wish to bid on any or all parts of either system please contact Arny Sokoloff at 978-4549. In any event, please be advised that UTCS will not offer the PDP-11 Lab as a service after November 1, 1983.

Ian F. Darwin
Arny Sokoloff

Terminal Rentals

Several types of video and hardcopy terminals, with accompanying acoustic modems, are available for rental to UTCS users. For details on terminals and rates, or to arrange a rental, please contact the Service Support Coordinator at 978-3787.

Theresa Kusy

Policy on Short Courses

Beginning January 1, 1984, UTCS will no longer accept non-computing appropriation numbers to cover a $10 charge for one short course. The $10 non-refundable registration fee must be paid either by cash or cheque, but receipts will be issued to students for reimbursement from their departments.

This policy change is due to the costs incurred by the UTCS Accounting Department, in both time and money, in processing these debit memos.

Please note the exchange will not affect anyone who is put on a course waiting list prior to January, nor does it apply to students registering for more than one course at a time.

Irene Rosiecki

UTCS Non-credit Short Courses

The following short courses are scheduled through December. As the Education Facility has limited seating capacity and, for our hands-on courses, a limited number of terminals available, registration is required for any of the courses you may wish to attend. If the course you are interested in is fully booked, a waiting list will be kept and another course scheduled. You will then be contacted as to the exact date and time of the course. Please note that we reserve the right to cancel courses, if registration is too low.

All short courses are held in the UTCS Education Facility, Room 221, McLennan Physical Laboratories. Anyone interested in taking these courses must register either in person or by calling:

Educational Services Support Specialist
Engineering Annex, Room 207
978-4565

A non-refundable registration fee of $10.00 must be paid ten days before the course is scheduled to begin. Registrants are required to hold a valid Service Access Code (SAC) for use during the course.

DDS101 - Introduction to Disk Datasets
Date: November 4 and December 2, 1983
Time: 1:00-3:00 p.m.

DEC301 - DECsystem-10 for Advanced Users
Date: November 17, 1983
Time: 9:30 a.m. - 3:00 p.m.
Prerequisite: DEC101

SAS101 - Introduction to SAS
Date: November 28 - December 2, 1983
Time: 10:00-11:00 a.m.
Prerequisite: DDS101 and WYL101

SAS201 - Intermediate SAS
Date: November 7-11, 1983
Time: 10:00-11:00 a.m.
Prerequisite: SAS101

continued...

UTCS Non-credit Short Courses continued

SOS/SCR101 - SOS/SCRIBE for Beginners

Date: November 21-25 and
December 12-16, 1983
Time: 9:30 a.m. - 12:30 p.m.

WYL101 - Introduction to WYLBUR

Date: November 14-16 and
December 5-7, 1983
Time: 10:00 a.m. - 12:00 noon
Prerequisite: DDS101

Irene Rosiecki

Change Committee

Changes to Academic and Administrative Systems

1. VM Release 2.0 was upgraded to 2.1 on the 3033/U16 computer on August 22.
2. LINECT=0 has been set as the JES default on the 3033/N12 computer as of August 18.
3. SPSSX 2.0 was installed for testing on the 3033/N12 computer on September 30.
4. Eight megabytes of memory were added to the IBM 4341 system on August 28.
5. VS/FORTRAN (LANG=66) was made the default release on the IBM 3033/N12 computer on September 9.
6. Data streaming for the 3033/N12 computer was installed on the first channel pair on September 3/4 and on the second channel pair on September 10/11.
7. EUT opened as a BICS site on September 13.
8. Trinity College BICS site opened on September 14.
9. The November 1982 release of APL was installed on September 18.
10. Charging for the file transfer facility for microcomputers to the IBM 3033/N12 computer was begun on September 20.
11. SAS Release 82.3 was installed for testing on the IBM 3033/N12 computer on September 14.
12. Installation of MVS/SCRIBE has been proposed for testing as a Class A product on the 3033/N12 computer.
13. SAS/FSP was installed for testing on the 3033/N12 computer on September 30.
14. The first string of 3380 disk storage was installed on the 3033/N12 computer on September 30.

Changes to WYLBUR

1. A LASER 9700 EXEC file was installed for use on WYLBUR on August 25.

Changes to the PDP11/70 (UNIX)

1. PACX Class 70, which accesses UNIX, has been segmented to better support the Statistics Department as of August 24.

Changes to Other Systems and Services

1. PACX was converted to single scan mode on September 3.
2. HSJS service via Class=W was discontinued as of September 5.
3. PACX Class 32 was increased by 12 lines on September 1.
4. The SCS VAX 780 was replaced by a VAX 750 on September 19.
5. Six Class 43 ports were removed from PACX on September 14.

Joan Coutts

Personnel Changes

Harriet Cooper has accepted a position with the National Assurance Company. She will be working in the area of Office Automation. **Martha Parrott** UTCS's Documentation Editor and Coordinator will be taking on Harriet's responsibilities.

Jim Amos has been promoted to Computer Operator II. Congratulations!

From our Operations Group **Janet Gebhart** has joined the Faculty of Applied Science & Engineering, and **Frank Cianfarani** has joined Information Systems Services (ISS).

Dan Lemmon has accepted Frank's position as Arts & Science Coordinator.

From our Systems Group we bid farewell to Systems Programmer **Peter Smith,** who has accepted a position with Storage Technology Corporation.

Mario Ruggerio is leaving Text Processing to join Human Computing Resources (HCR). Good Luck!

Elizabeth Weitmann

Recent Acquisitions in the Computer Library

Coburn, Peter et al.
Practical guide to computers in education.
Reading, Mass., Addison-Wesley, 1982.

Danziger, James N. et al.
Computers and politics: high technology in American local governments.
New York, Columbia University Press, 1982.

Dennis, John E., Jr. and Schnabel, R.B.
Numerical methods for unconstrained optimization and nonlinear equations.
Englewood Cliffs, N.J., Prentice-Hall, 1983.

Dijkstra, Edsger Wybe.
Selected writings on computing: a personal perspective.
New York, Springer-Verlag, 1982.

Gore, Marvin and Stubbe, J. 3d ed.
Elements of systems analysis.
Dubuque, Iowa, Wm. C. Brown, 1983

Holt, Richard C. and Hume, J.N.P.
Introduction to computer science using the TURING programming language.
Reston, Va., Reston Pub. Co., 1983.

Horowitz, Ellis.
Fundamentals of programming languages.
Rockville, Md., Computer Science Press, 1983.

Horowitz, Ellis, comp.
Programming languages: a grand tour.
Rockville, Md., Computer Science Press, 1983.

International Workshop on Office Automation Systems, 2d,
Couvent Royal de Saint-Maximin, France, Oct. 1981.
Office automation systems, ed. by N. Naffah.
Amsterdam, North-Holland, 1982.

Ledgard, Henry and Marcotty, M.
The programming language landscape.
Chicago Science Research Assoc., 1981.

Levy, David N.L. and Newborn, M.
All about chess and computers.
Rockville, Md., Computer Science Press, 1982.

continued...

Computer Library continued

Lewis, Theodore Gyle.
Software engineering: analysis and verification.
Reston, Va., Reston Pub. Co., 1982.

Marateck, Samuel L.
FORTRAN 77. 2d ed.
New York, Academic Press, 1983.

Sippl, Charles J. and Kidd, D.A.
Champaign, Ill., Matrix Publishers, 1975.

Smith, Brian Reffin.
Introduction to computer programming.
Burlington, Hayes Pub. Ltd., 1982.

Stibic, V.
Tools of the mind: techniques and methods for intellectual work.
Amsterdam, North-Holland, 1982.

Varga, Richard S.
Functional analysis and approximation theory in numerical analysis.
Philadelphia, S.I.A.M., 1971.

Zaks, Rodnay.
Advanced 6502 programming.
Berkeley, Cal., SYBEX, 1982.

Zaks, Rodnay.
Microprocessors: from chips to systems. 3d ed.
Berkeley, Cal., SYBEX, 1980.

Stephanie Johnston

UTCS Terminal and Advising Sites

Names and Locations

- **Central Advising Office (CAO), 978-HELP**
- **Education Facility (Educ),** McLennan Labs, 60 St. George St., Room 221
- **Engineering Annex (EAT, EUT, CDF),** 11 King's College Road, Rooms 103, 104, 107, 201, 203.
- **Erindale College (Erin), 828-5339,** Mississauga Road, Erindale Campus, Rooms 2005, 2039, 2045
- **New Physics (NPT),** Burton Tower, 60 St. George St., Room 1202
- **Robarts,** Robarts Library, 130 St. George St., Room 1061A
- **Scarborough College (Scar), 284-3122,** Military Trail, Scarborough Campus, Room S624, S625, S627, S628, S628A
- **Sidney Smith (AST & ASUT),** 100 St. George St., Rooms 1071, 1073, 2105
- **St.Michael's College,** 121 St. Joseph St., Room 101
- **Trinity College,** 6 Hoskins Ave., Room 024
- **Victoria University,** 73 Queens Park Cres., Room 012.

Sites	**Hours of Operation**				**Restrictions***	**Advising**
	Mon-Thurs	Fri	Sat	Sun		
AST	8:00-22:00	8:00-22:00	8:00-22:00	8:00-22:00	Research	Rm 2133
ASUT	24 hrs/day	24 hrs	24 hrs	24 hrs	BICS	No
CAO	10:00-18:00	10:00-18:00	closed	closed	Research	978-HELP
CDF	24 hrs/day	24 hrs	24 hrs	24 hrs	Res/Under	No
EAT	24 hrs/day	24 hrs	24 hrs	24 hrs	Research	Rm 106
Educ	9:00-16:30	9:00-16:30	closed	closed	Research**	978-HELP
(outer)	9:00-23:00	9:00-16:30	closed	closed	Research	978-HELP
Erin (2039)	9:00-21:00	9:00-17:00	12:00-17:00	12:00-17:00	Research	Rm 2005
(2045)	9:00-21:00	9:00-17:00	12:00-17:00	12:00-17:00	Undergrads	Rm 2005
EUT	24 hrs/day	24 hrs	24 hrs	24 hrs	BICS	No
NPT	24 hrs/day	24 hrs	24 hrs	24 hrs	Research (Key access)	978-HELP
Robarts	8:30-24:00	8:30-24:00	9:00-17:00	13:00-22:00	BICS	No
Scar	9:00-24:00	9:00-24:00	10:00-17:00	closed	Research	Rm S624, S626
					Undergrads	No
St.Michael's	24 hrs/day	24 hrs	24 hrs	24 hrs	BICS	Arranged by College
Trinity	8:00-23:00	8:00-23:00	8:00-23:00	8:00-23:00	BICS	Arranged by College
Victoria	8:30-23:00	8:30-23:00	closed	closed	BICS	Arranged by College

* Research includes graduates, faculty, staff. ** May be unavailable due to UTCS courses.

Advising Hours

AST/ASUT	Monday to Friday, 10:00 - 18:00
CAO	Monday to Friday, 10:00 - 18:00
EAT	Monday to Friday, 13:00 - 17:00
Erin, Scar	During normal hours

Services Available

	BICS	**Keypunch**	**LIBRA**	**PACX**	**Printers**	**Oracle**	**UNIX**
AST	N	Y	N	Y	Y	N	N
ASUT	Y	N	N	N	Y	Y	N
CDF	N	N	N	N	Y	N	Y
EAT	N	Y	N	Y	Y	N	N
EUT	Y	N	Y	N	Y	Y	Y
Educ	N	N	N	Y	N	N	N
Erin	N	Y	Y	Y	Y	N	Y
NPT	N	Y	N	Y	Y	N	N
Robarts	Y	N	N	N	Y	Y	N
Scar	N	Y	Y	Y	Y	N	Y
St.Michael's	Y	N	N	N	Y	Y	N
Trinity	Y	N	N	N	Y	N	N
Victoria	Y	N	N	N	Y	N	N

Y=yes, N=no

UTCS Systems

3033/N12 Processor

- located in McLennan Physical Laboratories
- provides General Purpose Job Stream, TSO, WYLBUR, APL
- 12 megabytes of memory
- MVS with JES2

3033/U16 Processor

- located in McLennan Physical Laboratories
- provides instructional access using BICS
- 16 megabytes of memory
- UTS (modified UNIX Seventh Edition) under VM

4341 Mod II Processor

- located in McLennan Physical Laboratories
- provides administrative IMS/VS, DB/DC, Batch and TSO
- 16 megabytes of memory
- MVS with JES2

DECsystem-10 Model 1090

- located in McLennan Physical Laboratories
- provides General Purpose Time-Sharing
- 512 K - 36 bit words of memory
- TOPS-10 operating system, version 7.01A
- GALAXY queuing, spooling, and batch subsystem, Version 2.0

PDP 11/70

- located in McLennan Physical Laboratories
- provides UNIX text processing
- 3.75 MB of memory
- UNIX Seventh Edition

VAX 11/750

- located in McLennan Physical Laboratories
- provides backup, program testing, and inter-communication relating to student services
- provides Spare Cycle Service
- 3 megabytes of memory
- VMS

Computer Disciplines Facility

VAX 11/750 (2 megabytes of memory)
VAX 11/780 (4 megabytes of memory)

- located in Engineering Annex
- provides Computer Science interactive access
- UNIX (Berkeley)

Communications & Technical Support

- located in Sandford Fleming Building, Fourth Floor
- provides consulting and configuration of microcomputer systems
- Communications Group provides communications systems, terminals, modems, data channels: consulting and installation.
- Field Service Group installs and maintains small computer systems on a contract basis or on a cost-per-call basis.
- provides consulting on minicomputers; configures and installs minicomputer systems

Microcomputer Facility

- located in McLennan Physical Laboratories
- Machines available include:
  IBM Personal Computer, APPLE II Plus, TRS-80 Model 1, S-100 CP/M System, Osborne Micro, plus a variety of others on loan from supppliers
- offers media conversion services

Scarborough College Systems

VAX 11/750 (2 megabytes of memory)

- provides instructional access using LIBRA
- VMS

VAX 11/750 (5 megabytes of memory)

- provides instructional access using UNIX (Berkeley)

Erindale College Systems

VAX 11/780 (4 megabytes of memory)

- provides instructional access using LIBRA and Research access
- VMS

VAX 11/750 (5 megabytes of memory)

- provides instructional access using UNIX (Berkeley)

Consulting and Enquiries

External Marketing Consultants	Dr. Bill Fehlner	MP345	6509
	Ihor Prociuk	MP345	6875
Erindale College	Peter Wall	2043	828-5311
Scarborough College	William Barek	S626	284-3173

General Enquiries	4990	System Status Enquiries (DEC)	4318
Central Advising	HELP	System Status Enquiries (IBM)	7393
Account & Access Code Enquiries (U of T)	8703	300 Baud Interactive Services	6200
Account & Access Code Enquiries (External)	7148	1200 Baud Interactive Services	3959
Tape Library (Academic Services)	7319	DATAPAC	4320 0056
Tape Library (Administrative Services)	6693	Telenet	0302043200056
U of T Computer Library	2987	Tymnet	<backspace> DPAC;302043200056

UTCS Directory

Director	Dr. Warren Jackson	MP350	8948
Associate Director	Eugene Siciunas	MP350	5058
Executive Asst., Research & Planning	Wendy Chin	MP350	5568
Senior Budget Analyst	Sheila Brown	MP350	8697
Managers			
Accounting & Administration	Wendy Chin (Interim)	MP350	4428
Communications & Technical Support	Norman Housley	SF4306	4967
Operations	Dr. Bob Chambers	MP350	7092
Systems	Bill Lauriston	MP331	3579
User Interface	Don Gibson	MP345	7331

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	Secretary	Ms. C. Pereira	4463
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Computing Disciplines Facility	Chairman	Prof. R. Hehner	6026
LIBRA Steering Committee	Chairman	Prof. G.S. Graham	6321
Natural Language Processing Steering Committee	Chairman	Prof. I. Lancashire	828-5273

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